Health of Peach Trees in 39 South Carolina Orchards

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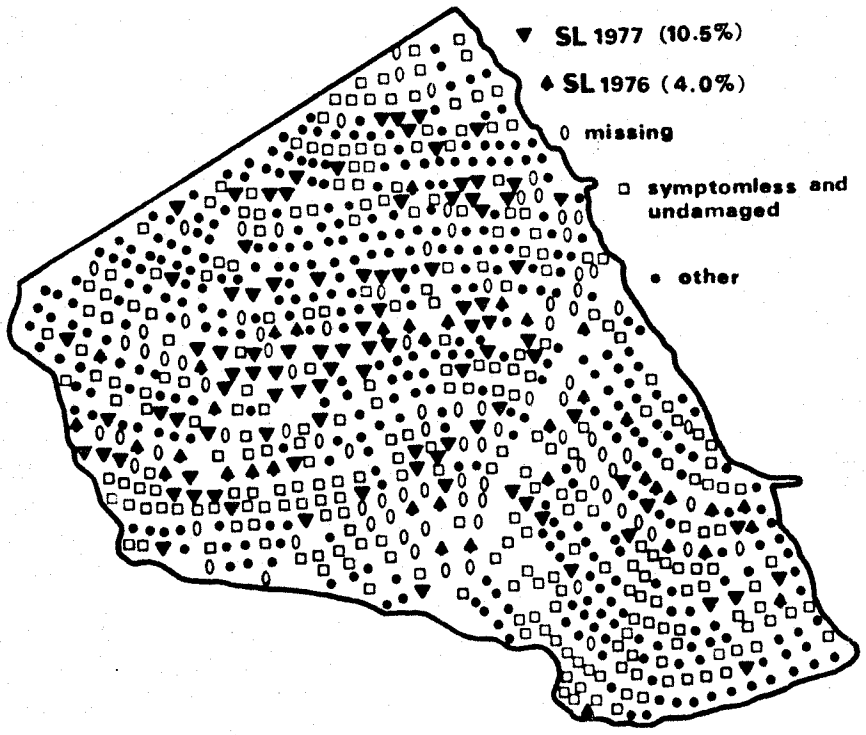

Fig. 1. Map of ten-year-old peach orchard with extensive limb breakage and trunk damage. Prevalence of short life (SL) increased from 4 to 10 per cent in 1 year, and at least 50 per cent of the trees had crown gall.

One of the strengths of the 10-point program developed by research and extension personnel in the Southeast to control peach tree short life is its emphasis on prevention. In 1976 and 1977 we studied in detail 39 peach orchards in Edgefield County, South Carolina, to determine the health of their trees and what factors contribute to premature death of the peach trees in the county. Our conclusion from this evaluation of more than 36,000 trees 4 years old and older is that better orchard management would correct most of the conditions contributing to tree losses and low production.

The conditions that contributed to a rapid deterioration of tree health with age varied considerably from orchard to orchard. In some the prominent problem was soil management; in others, it was extensive damage

to tree structure; and in others, it was either oak root rot or short life. Conditions varied so much that specific recommendations were needed for each orchard.

Of the trees surveyed, 35 per cent appeared healthy, 27 per cent had been lost, including 7 per cent replanted positions, and 38 per cent were diseased or badly damaged. Most orchards needed erosion or drainage management in at least part of their area. The decline in health was most rapid in areas with severe soil problems.

Conditions that reduced estimated productivity started early in the life of a tree. Extensive limb and trunk damage during the earliest bearing years were soon compounded by wood rots. By age 9 many trees had lost many limbs, and limbs that remained would break with a heavy fruit load. Some entire trees had collapsed from structural weakness caused by wood rot.

In 1976 and 1977 death from diseases was relatively rare. Collapse of most or all of a tree was attributable to short life in 0.8 per cent of the trees. Of the 39 orchards studied, 24 had no short life and 8 had less than 1 per cent. The highest losses from short life, 5 and 10 per cent, were in two orchards with a high prevalence of crown gall. Most trees in these two orchards had previously been badly damaged by agricultural implements. Death by oak root rot was also sporadic, and the death rate was low (0.6 per cent); only one orchard had significant (8 per cent) losses of trees from oak root rot.

Estimated productivity declined rapidly as trees aged. Many 12 year old orchards had lost 60 to 80 per cent of their estimated productivity. Growers frequently removed such orchards from production. A few orchards 13 years and older had lower losses in estimated productivity and were not eliminated. Although the proportion of trees lost was important, the quality of the trees that remained was often the key to whether or not the orchard was eliminated. Of the 39 orchards studied, four were totally eliminated and two partially eliminated by the 2nd year of the observations.

A typical orchard in rapid decline is illustrated in Fig. 1. This 10-year-old orchard originally consisted of about 1,000 trees. In 1976, limb breakage was extensive (17 per cent), most of the bark was pulled off the trunk near the soil line on 25 per cent of the trees, at least 50 per cent of the trees had crown gall, 4 per cent had short life, 12 per cent had dead or weak limbs, and 6 per cent were generally weak. In 1977 losses due to short life had increased to 10 per cent and structural damage had increased. Fortunately, 32 per cent of the trees had no apparent problems and the orchard remained in production. It was less healthy, however, than some considerably older orchards.

In general, keeping in mind the value of preventive measures, we feel that besides the application of the 10-point program, structural damage should be avoided. This could be achieved by use of a better-structured tree with limbs that originate higher, and by more care in the use of agricultural implements in orchard cultivation. Also, better soil management and the use of better planting stock, to be healthy when received from the nursery, probably would have helped in several of the orchards studied.